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Solar cells thinner than hair strand

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PARIS: Scientists have developed solar cells 20,000 times as thin as a human hair that they believe will power the nanoscale gadgetry of tomorrow, according to a study released on Wednesday.

From consumer devices to bioterrorism monitors to in-body diagnostics, this ultra-microscopic technology is poised to take centrestage in less than a decade from now.

But finding the sources to power it has become a headache. Charles Leiber and colleagues at Harvard University describe silicon nanowire they devised that can convert light into electrical energy.

Virtually invisible to the naked eye, a single strand can crank out up to 200 picowatts.

Two hundred billionths of a watt may not seem much, but at nanoscale it is enough to provide a steady output of electricity to run ultralow power electronics, including some that could be worn on, or even inside, the body. It is also clean, highly efficient and renewable.

"An individual nanoelectonic device will indeed consume very little power, but to do something interesting will require many interconnected devices and thus the power requirement, even for nanosystems, can be a challenge," Lieber explained in an email.

Monitoring bioterrorism threats, for example, would require an entire array of nanosensors, nanoprocessors to analyse the signals received, and nano-transmitters to relay information to a centralised facility, he said. Conventional sources, he added, are "bulky, non-renewable and expensive" by comparison.